REMARKS

Reconsideration of this application is respectfully requested. Claims 6, 22, 31, 32, 45, 52, and 53 have been amended to minor correct spelling and punctuation errors.

Claims 1-56 are pending and under consideration. No new matter has been added by way of this amendment.

Rejections under 35 U.S.C. § 102

Claims 1-4, 9, 21, 25, 28-32, 45-47, 49-51, and 54-56 have been rejected as anticipated by U.S. Patent No. 6,110,253 ("Kohr"). As to claim 1, the Examiner contends that Kohr teaches a high temperature heap bioleaching process wherein the irrigation flow rate of the heap is affected by certain variables, including temperature (*see* Office Action, page 3). The Examiner then describes various features of the claimed invention that are allegedly disclosed by Kohr (*see* Office action, pages 4-5).

Applicants traverse the rejection and respectfully request reconsideration.

Applicants submit that in order for a reference to anticipate a claim, the reference must disclose each and every limitation of the claimed invention. *Dana Corp. v. Am. Axle & Mfg., Inc.*, 61 USPQ 2d 1609 (Fed. Cir. 2002). The present claims call for a method of *controlling* a heap leach process by controlling the irrigation rate of a heap as a function several parameters. Specifically, claim 1 calls for a method of *controlling* a heap leach process by controlling the irrigation rate of the heap. The irrigation rate is controlled as a function of either:

1) the aeration rate of the heap;

2) a determination of advection at least one point in the heap and a determination of temperature at least at one point in the heap; or

3) controlling the aeration rate of the heap as a function of the oxidation rate of material within the heap.

Claim 28 calls for a method of increasing the temperature of heap of material for heap leaching.

Kohr does not disclose *actively controlling* the irrigation *rate* of a heap by any of the factors recited in claim 1, or disclose a method of increasing the temperature of heap of material for heap leaching using any of the features of claim 28. Although Kohr teaches that the temperature of a heap will affect the application rate of process leach solution, there is no disclosure or suggestion in Kohr regarding actively controlling the heap leach process by aeration, advection/temperature determination, or controlling aeration as a function of heap oxidation, as called for in the present claims. Therefore, Kohr does not anticipate the present claims because it fails to recite each of the features set forth in these claims.

* * *

Claims 1, 2, and 13-15 have been rejected as allegedly anticipated by U.S. Patent No. 6,736,877 ("Harlamovs"). According to the Examiner, Harlamovs teaches that a heap's aeration rate has an effect on zinc extraction rate, which in turn affects the irrigation solution since part of the leach solution is recycled (*see* Office Action, page 5).

Applicants traverse the rejection and respectfully request reconsideration.

Applicants respectfully submit that the Examiner has misconstrued the reference. Harlamovs discloses that the aeration rate affects zinc extraction (*see* Harlamovs, col. 13, Example 5). As pointed out by the Examiner, Harlamovs also discloses that extraction raffinate is recycled to the heap for use as acid solution (*see* col. 8, lines 62-64). Finally, Harlamovs discloses that part of the leach solution can be *optionally* recycled as heap irrigation solution (*see* col. 7, lines 4-7). However, similar to Kohr described above, none of this disclosure teaches or suggests active *control* of the irrigation *rate* of a heap by the factors called for in the present claims. Thus, Applicants respectfully request that this rejection be withdrawn.

Rejections under 35 U.S.C. § 103

The Examiner has made several obviousness rejections, as summarized below:

Claims 16 and 20 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Harlamovs as applied to claims 1, 13-15, and 17-19. According to the Examiner, Harlamovs discloses the invention "substantially as claimed" except for the claimed irrigation ratios.

Claims 10-12 and 22-24 stand rejected as allegedly obvious over Kohr as applied to claims 1, 9, and 22. The Examiner contends that Kohr discloses the invention substantially as claimed except for the oxygen utilization ranges or the point at which temperature is determined.

Claims 26 and 27 stand rejected as allegedly obvious over Kohr as applied to claim 1, further in view of U.S. Patent No. 6,860,919 ("Norton"). The Examiner concedes that Kohr does not teach determining the oxidation rate of a heap, and relies of Norton as teaching that oxidative bioleaching is dependent on the supply of oxygen. Thus, the Examiner concludes that it would have been obvious to person of ordinary skill in the art to determine the oxidation supply and control the oxidation rate of the heap.

Claims 33-40, 41-44, 48, 52, and 53 stand rejected as allegedly obvious over Kohr as applied to claim 1, further in view of MacLeod et al., *Applied Environmental Microbiology*, or U.S. Patent No. 6,435,769 ("Harrington"). The Examiner contends that Kohr discloses the invention substantially as claimed except for the introduction of microorganisms ("UMB") into a heap and the use of slow-release nutrients for the reactivation of UMB.

Applicants traverse these rejections and respectfully request reconsideration.

For a claim to be obvious under U.S. patent law, the Examiner must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art. Additionally, the Patent Office must articulate the reason(s) why a skilled artisan "would have recognized" that combining the prior art "would have yielded

nothing more than predictable results" (*see* Examination Guidelines, Department of Commerce, *Federal Register*, 72(195):57529 (October 10, 2007).

Neither Harlamovs nor Kohr teaches or suggests the invention called for in the present claims. Although Kohr and Harlamovs disclose heap leaching methods, they do not teach or suggest *controlling* the *rate* of heap irrigation, as presently called for in claim 1. Further, there is no disclosure in these references that would have led a person of ordinary skill in the art to predict that the rate of heap irrigation could successfully be controlled using the claimed parameters because while some of the parameters are disclosed in the cited references, they fail to teach or suggest that the claimed parameters can (or should) be used to *control* the *rate* of irrigation. This feature of the present claims was therefore unpredictable and establishes that the present claims are not obvious. Accordingly, a person of ordinary skill in the art would not have predicted the success of the present invention, as required by the relevant rules.

Further, neither Kohr nor Harlamovs would have rendered the invention of claims 10-12, 16, 20, 26, 27, 33-40, 41-44, 48, 52, or 53 obvious even in view of Norton or MacLeod because base claim 1 is not obvious in view of the cited references for the reasons described above. Therefore, Applicants respectfully request that these rejections be withdrawn.

Double Patenting Rejection

Claims 1 and 33-39 have been provisionally rejected for obviousness-type double patenting over claims 1-19 of U.S. Application No. 10/528,381 ("the '381 application"). The Examiner states that although the conflicting claims are not identical, they are also not patentably distinct.

In response, Applicants respectfully request that the rejection be held in abeyance because the conflicting claims have not yet been allowed or granted in a U.S. patent.

Conclusion

In view of the foregoing remarks, it is respectfully requested that the application be reconsidered and that all pending claims be allowed.

If there are any other issues remaining that the Examiner believes can be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

By _____

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